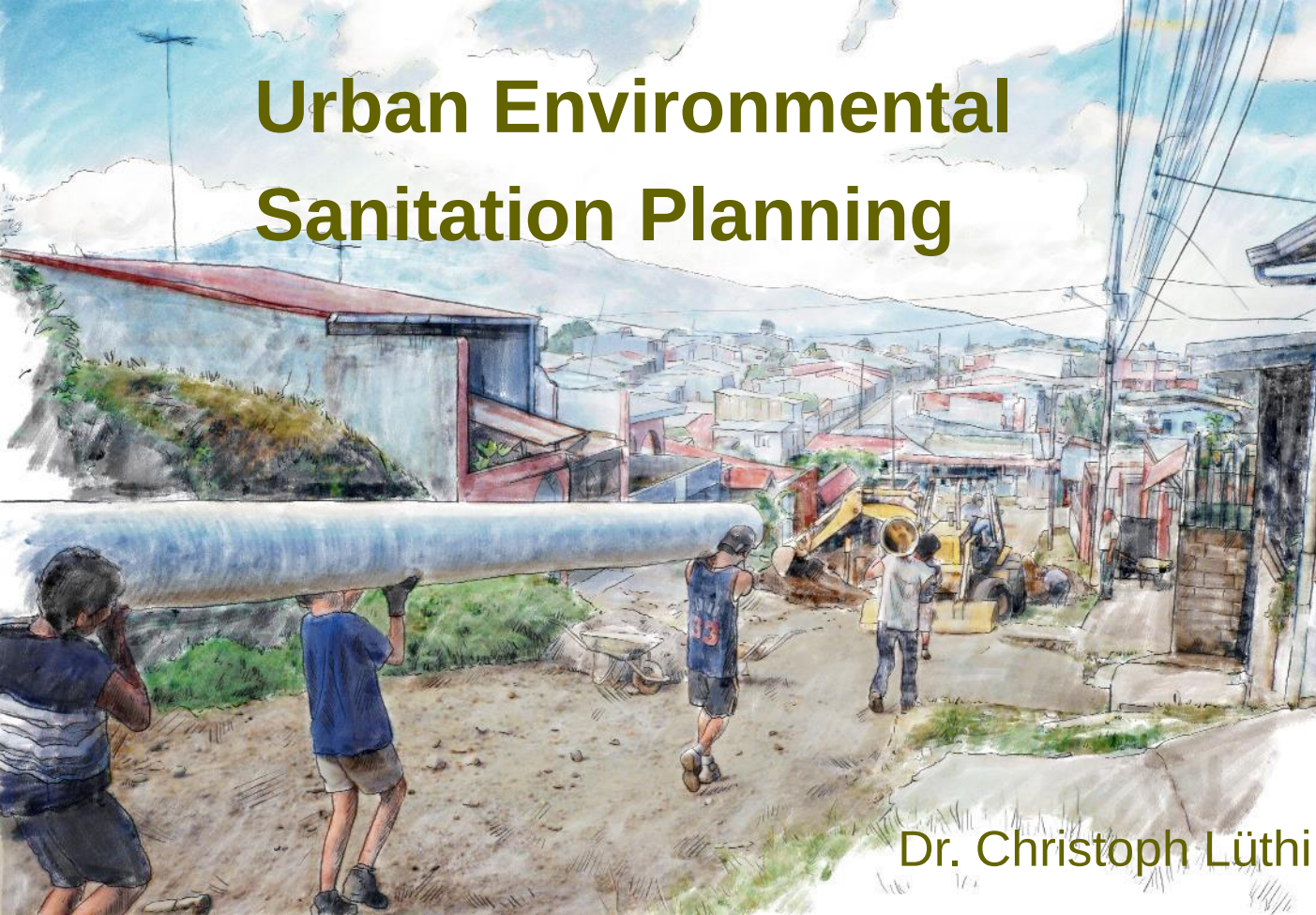


Urban Environmental Sanitation Planning

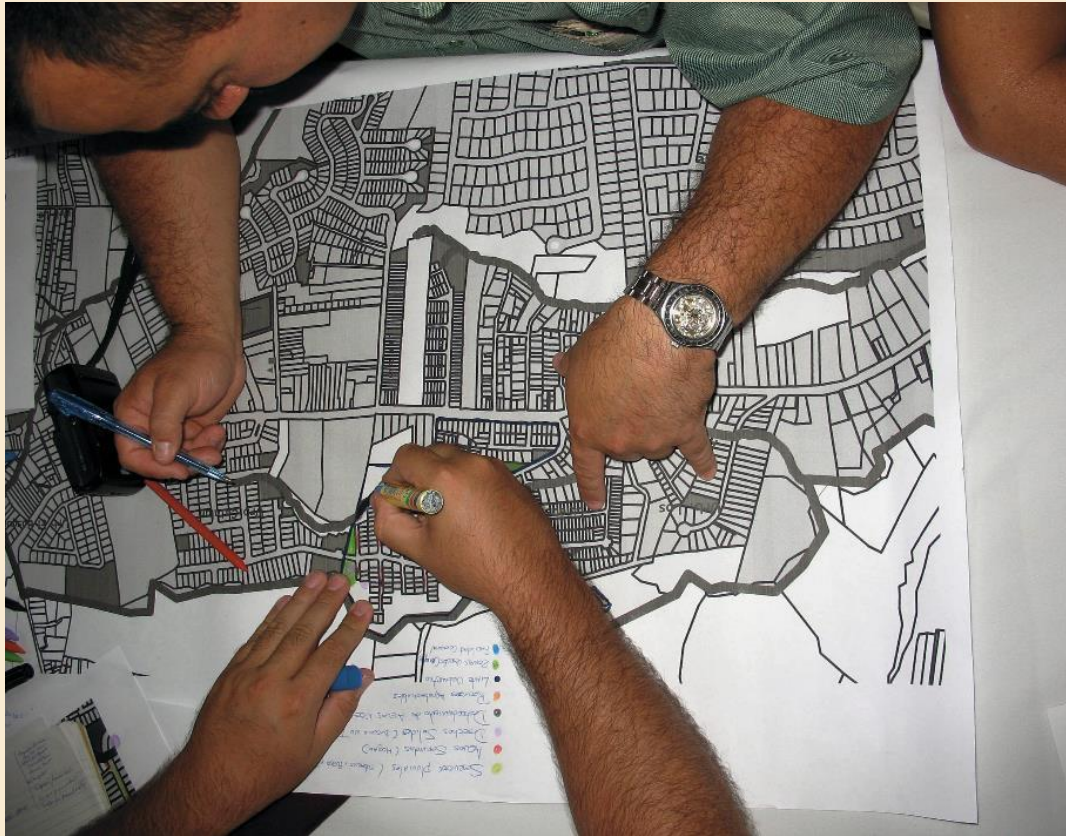
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Sandec
Water and Sanitation in
Developing Countries



Dr. Christoph Lüthi

Learning Goals



Planning workshop, Costa Rica

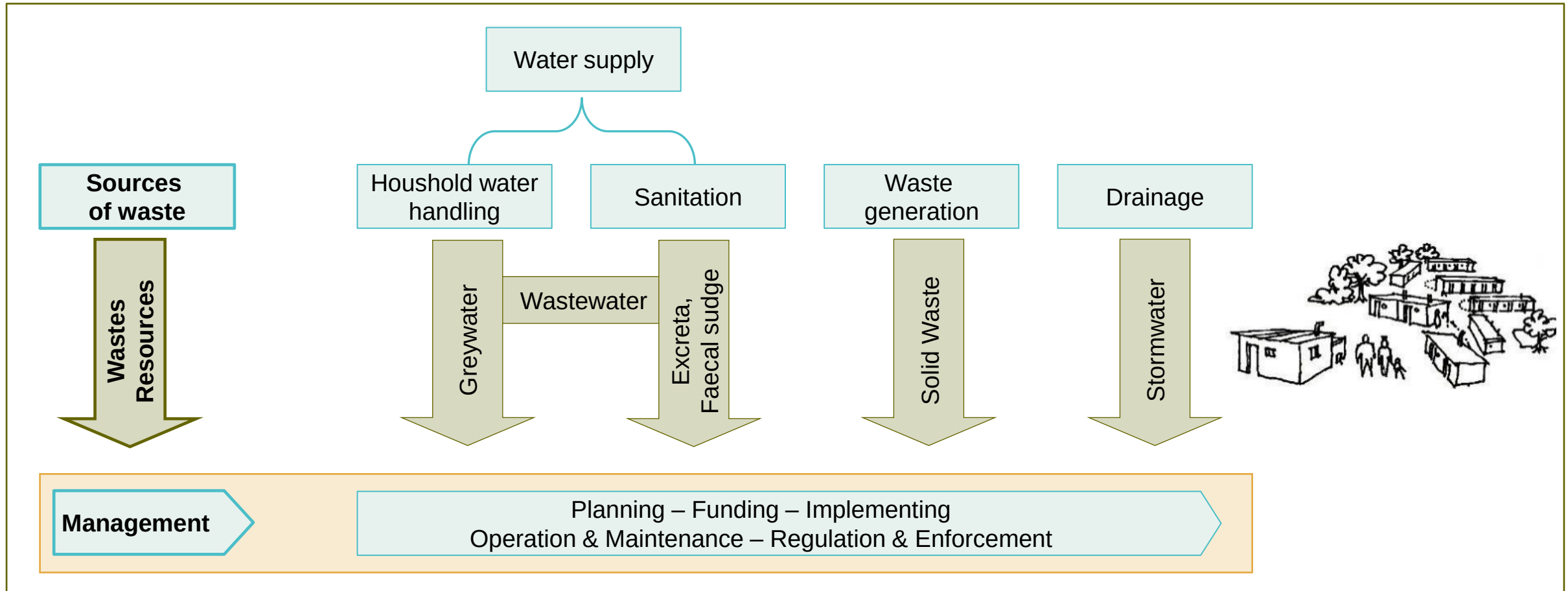
© Sandec

- Distinguish different sanitation planning approaches from city to neighbourhood scale
- Identify key factors that shape urban sanitation in low- and middle-income settings
- Understand the main features of an enabling environment and why it is important

Coming
Lectures

	24.10	Semester break (no lecture)	-
7	31.10	Innovative Sanitation Planning in practice	A. Narayan
8	07.11	Municipal solid waste management	D. Tosi
9	14.11	Water supply from source to consumer	M. Boller
10	21.11	Group work Q+A (on-line: 10:15 – 11:00)	C. Lüthi
11	28.11	Project management for development	F. Suter
12	05.12	Guest lecture: Global WASH Cluster, Geneva	A. Salagnac
13	12.12	Mock exam, career prospects	C. Lüthi

What is the focus of this module?

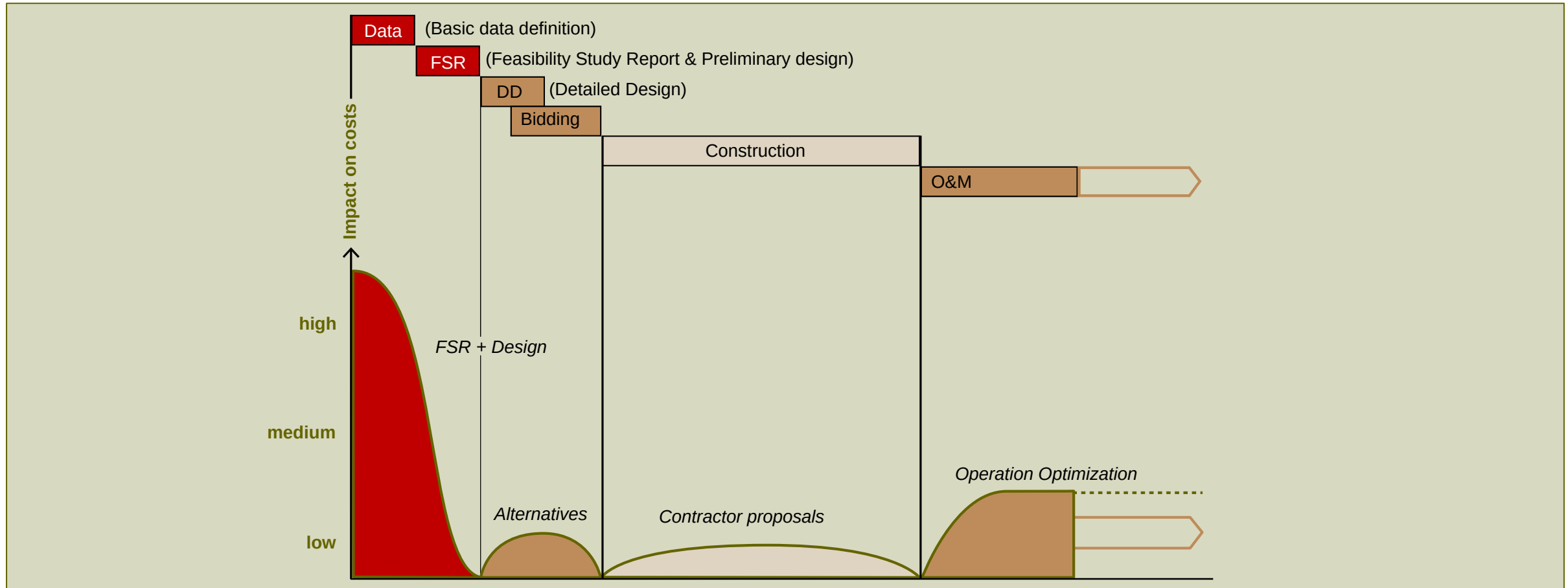


Planning definition

“ **Planning** is a process of making choices among the options that appear open for the future and then securing their implementation. ” (Roberts, 1974)

“ Everybody thinks they have a plan, until they get punched in the face. ” (M. Tyson, 2012)

The case for good planning (i)



Planning for the unknown...



Population City of Dhaka, Bangladesh

1990 6'000'000 inhabitants

2018 16'400'000 inhabitants

+9,4 million

The complexities of urban sanitation



The complexities of urban sanitation



Social Dynamics

Heterogeneous communities – lower social cohesion

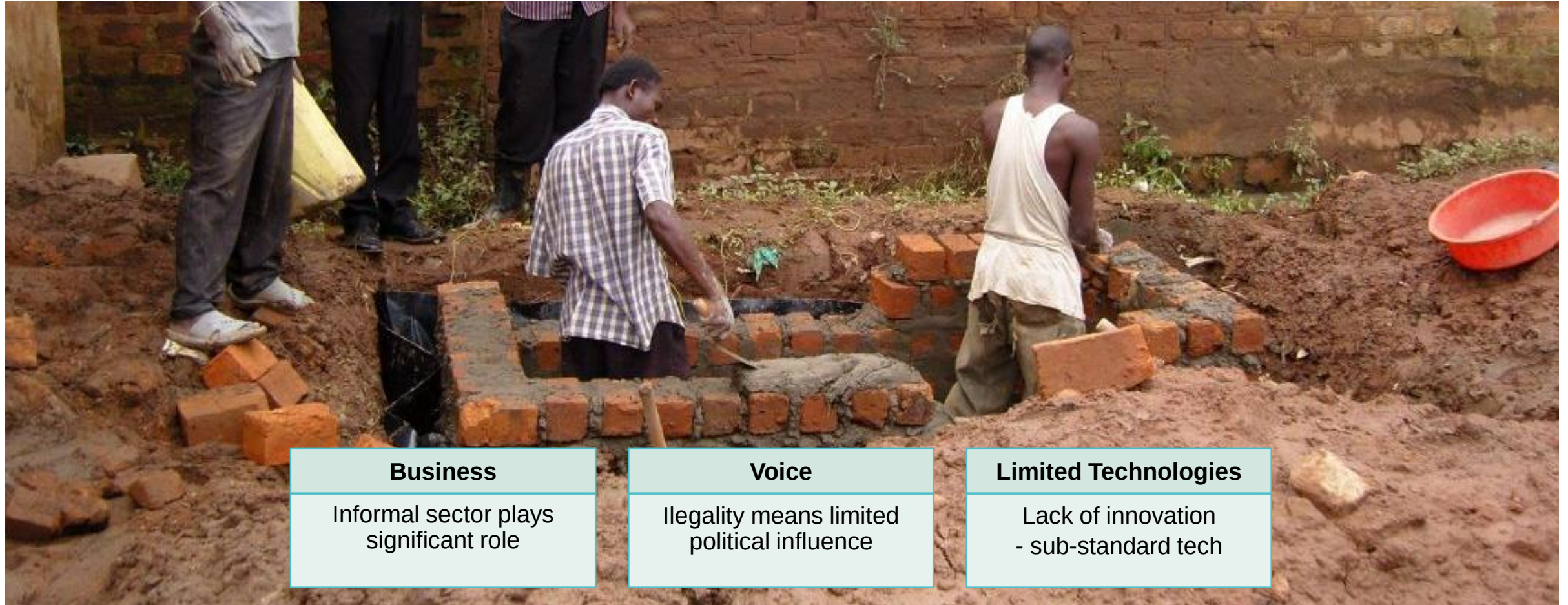
Land tenure

Denial of legality of land, over-regulation of land development

Poverty

Rental market impacts
- Commodification

The complexities of urban sanitation



Business

Informal sector plays significant role

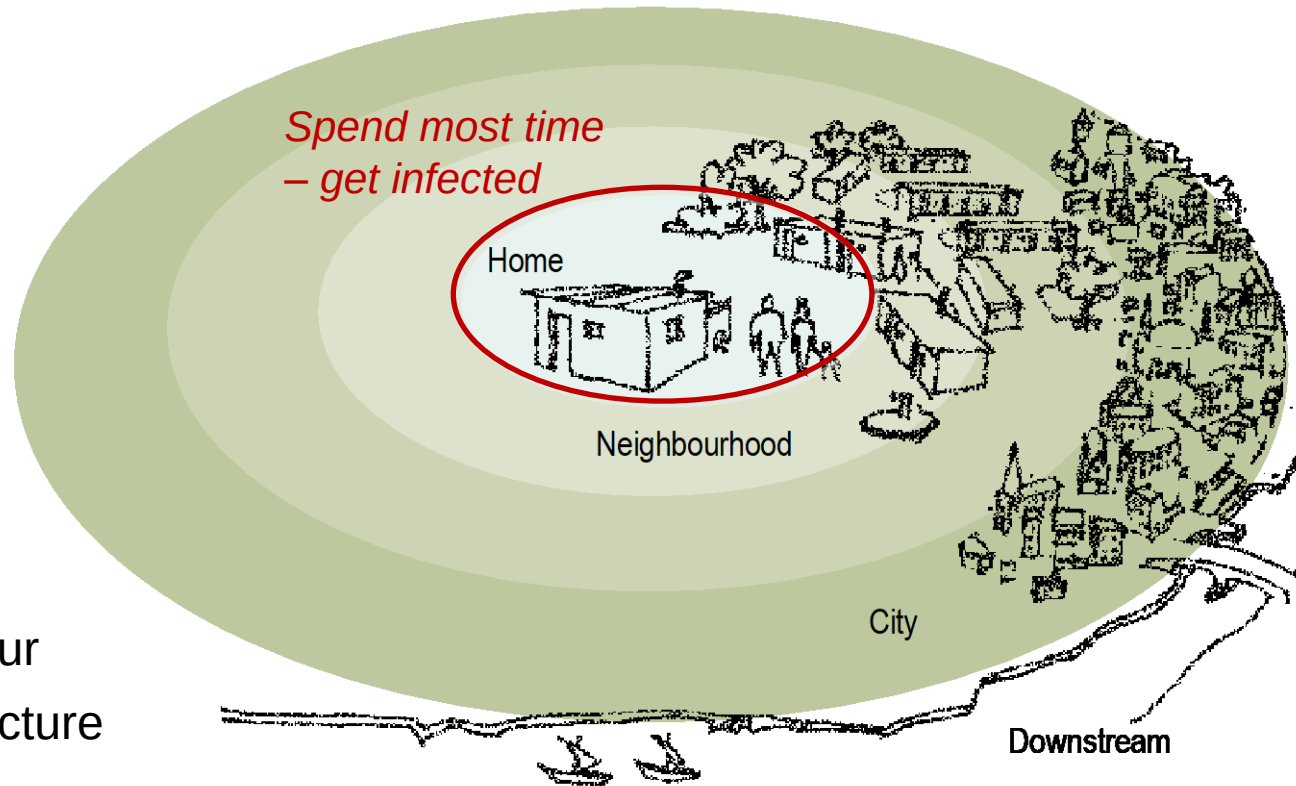
Voice

Illegality means limited political influence

Limited Technologies

Lack of innovation
- sub-standard tech

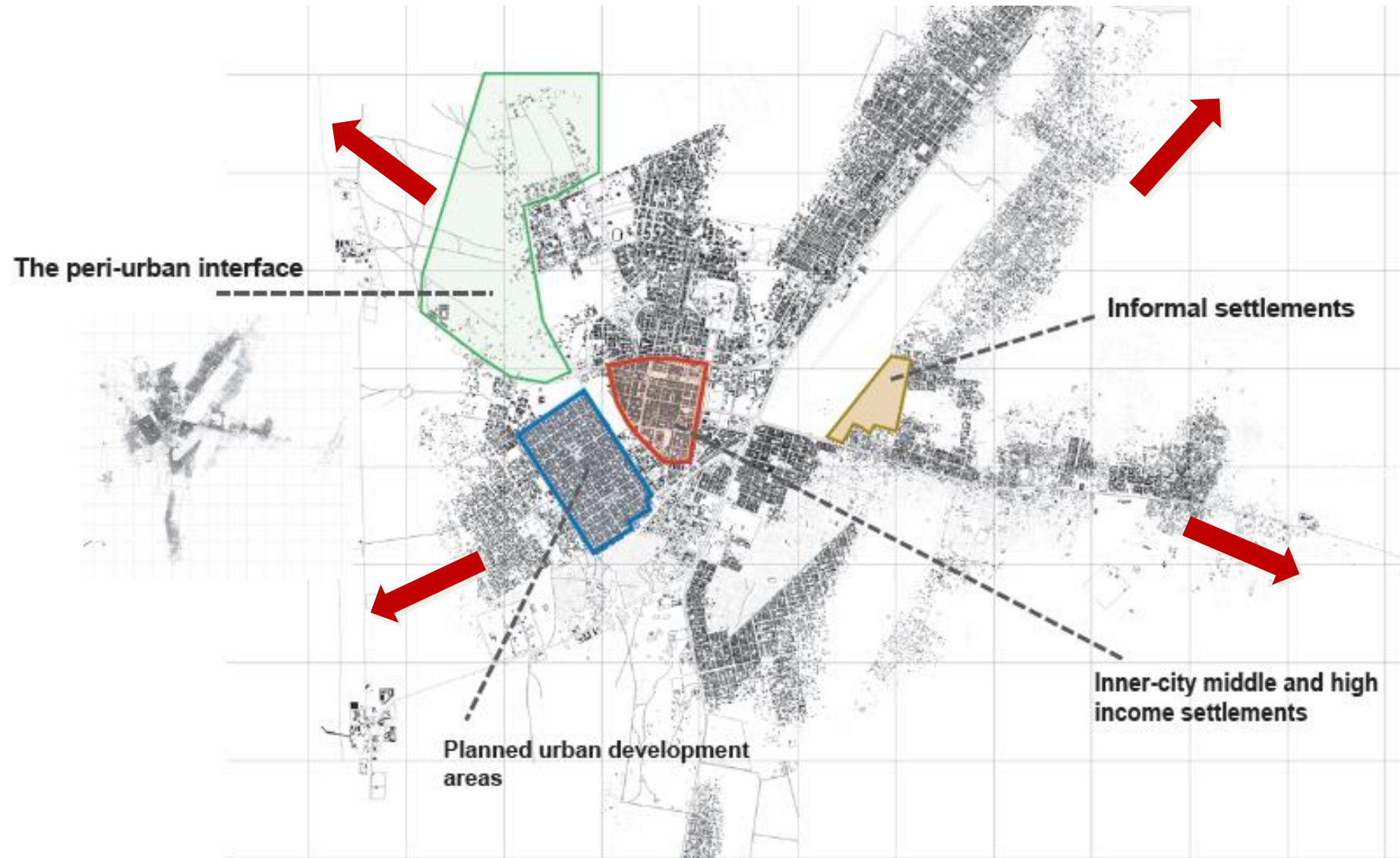
The urban domains



Key factors:

- hygiene behaviour
- existing infrastructure
- nutrition

...growing spatial disparities

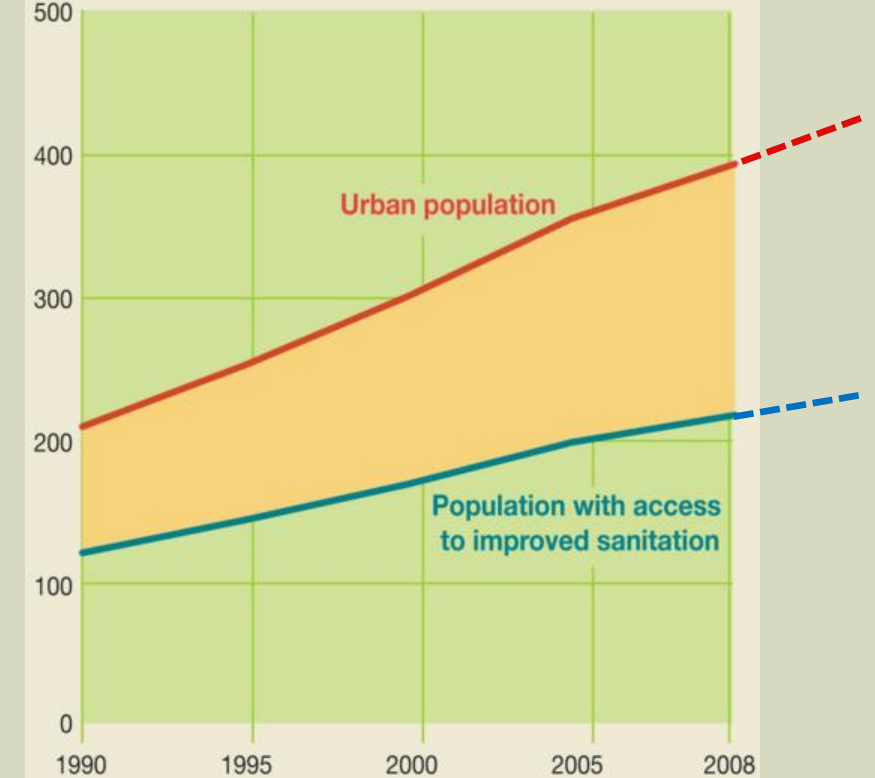


The widening service gap in Africa



Access to sanitation in urban Africa

Million people



Source: WHO-UNICEF, A Snapshot of Drinking Water and Sanitation in Africa, 2010.

% of safely managed sanitation in selected cities



- safely managed sanitation
- unsafely managed sanitation

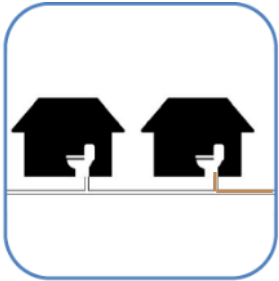
Source: J. Loosli (2020)



Mumbai, India

Slum sanitation (i)

Slum sanitation features a number of service options...

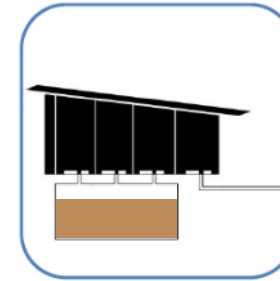


- 1. domestic sewers or FSM**
 Service of a household toilet connected to the central sewer system or well managed FSM

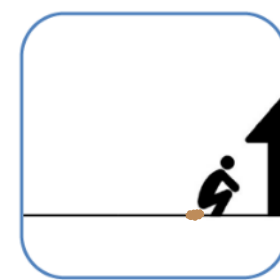
safely managed



- 2. shared on-site**
 Service of a shared toilet among several households in their plot or building. Pit latrines or septic tanks are used.



- 3. public sanitation**
 Service of sanitation as a business, pa-per-use. Different technologies are used. Operation by CBOs or enterprises.



- 4. Open defecation**
 Service of people helping themselves. Use of plastic bags, buckets or open defecation.

Slum sanitation (ii)

Toilet options for slum areas:

1. **Household toilet:** serving a single household.
2. **Shared toilet:** serving several surrounding households.
3. **Public (communal) toilet:** serving anyone who pays – can be privately or publicly owned/managed



Past approaches failed to meet targets...



Malawi



Costa Rica



Ghana

India:

Only 400 of 4500 cities have primary sewage treatment before disposal

Ghana:

Over 70% centralized wastewater treatment plants are out of operation

Principal planning frameworks and their characteristics

	1 Planning model	2 Market model	3 Collective action model
Overriding principal			
Decision-makers	Governments	Private Sector	Civil Society
Criteria for decisions			
Guides for behaviour			
Sanctions			
Mode of operation			

Principal planning frameworks and their characteristics

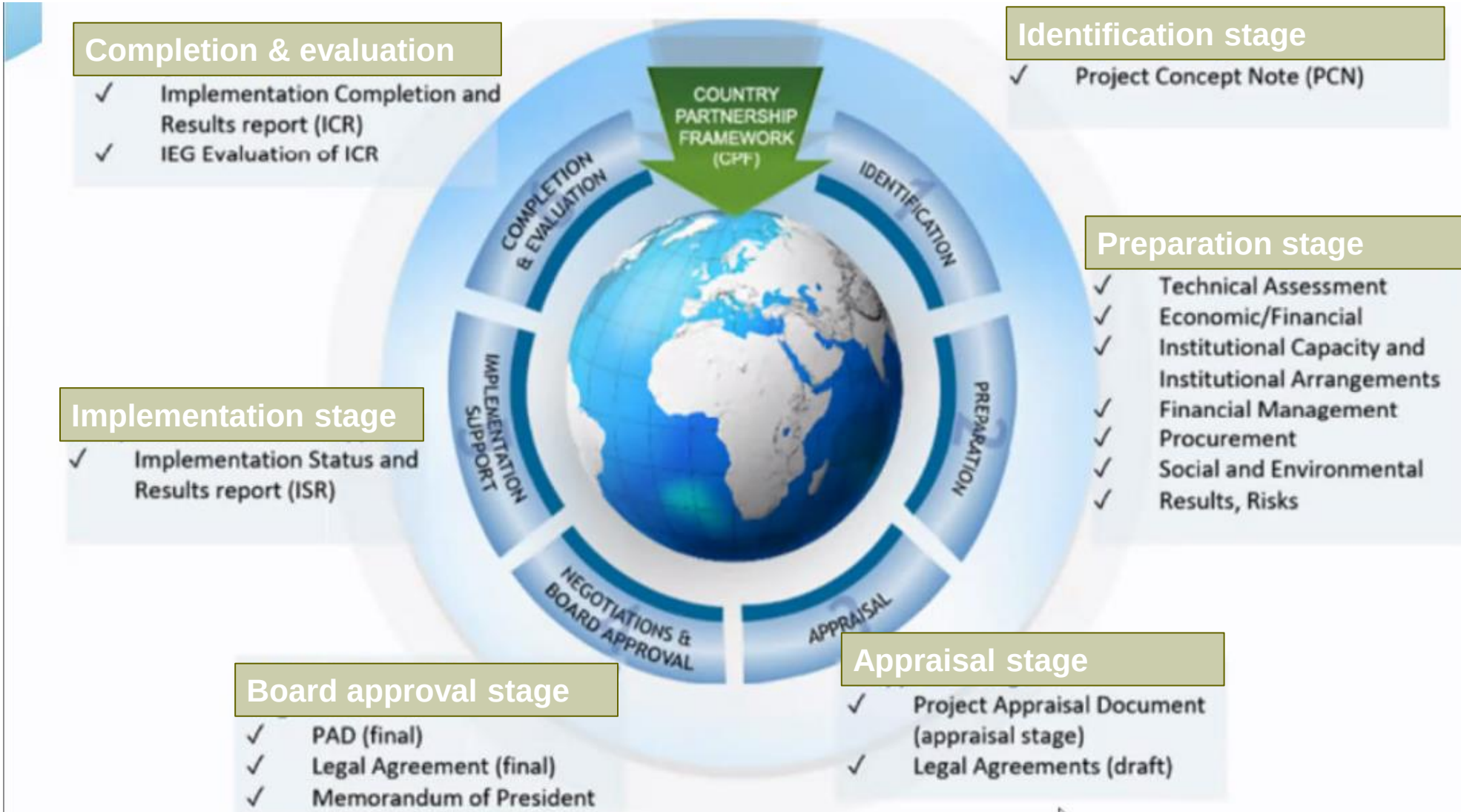
	1 Planning model	2 Market model	3 Collective action model
Overriding principal	Bureaucratic organization	Market processes	Community action
Decision-makers	Administrators, engineers, public officials	Individuals, households, vendors, enterprises	Leaders and members of grass-roots organizations
Criteria for decisions	Policy, and conformity with a plan	Efficiency, maximization of profit or utility	Interests of members and visions of leaders
Guides for behaviour	Targets, regulations and technical standards	Price signals, sanitation marketing	Agreements and accepted goals
Sanctions	State authority backed by coercion	Financial loss	Social pressure
Mode of operation	Top-down	Individualistic	Bottom-up

Source: McGranahan, G., et al (2001). The Citizens at Risk – From Urban Settlements to Sustainable Cities

1 The planning model

- In the **conventional planning** approach, utility planners & engineers develop demand projections based on demographic and economic indicators
- Infrastructure planning and service delivery continue to be **supply-driven** with a high degree of centralised control, little local accountability and low end-user involvement
- The supply-driven model is a **top-down approach**, built around bureaucratic mechanisms and implemented by govt bureaucrats and engineers – often “one-size-fits-all”
- Championed by: **International Finance Institutions** (IFIs) and **Central Governments** all over the world.

1 Planning model – the World Bank project cycle



1 Planning model – example Mauritania

Water supply Nouakchott



1 Planning model – example Mauritania

Micro-census to gather essential information



1 Planning model – example Malaysia

Early Days in Malaya



Prior to 1950-s

Technology ↑



Pour Flush

1950-s



Septic Tank

1960-s



Imhoff Tank

1970-s



OP/AL

1980-s



Activated Sludge/
Biological Filters

1990-s



Fully Mechanised
Plant

2000

Year

Primitive / Primary Treatment
(Address Public Health)

Partial / Full Secondary Treatment
(Address River Pollution)

Future Tertiary Treatment
(Address Environment)

1 Planning model – deficiencies

- **Prescriptive, supply-led;**
fails to take into account diverse nature & rapidly changing urban environments;
- **Over-engineered solutions;**
that ignore people's needs and willingness/ability to pay;
- **Vested (political) interests;**
consistent neglect of the unserved urban poor;
- **Unrealistic planning frameworks;**
that neglect socio-economic realities, and institutional/capacity bottlenecks;

1 Planning model – deficiencies



Benefits the rich

One size fits all
solutions

Capital & O&M cost
not covered

Favours large-scale
contracts, excludes
SME

2

The market model

- In the market model, resident's willingness to pay & invest drives improvement efforts, which are implemented by private sector service providers.
- It is then up to the residents to decide whether it is worth investing in a TV, improved sanitation, consumption...
- Economic well-being, technological options and residents' preferences determine sanitary conditions.
- Great attention paid to social marketing and creating demand.
- Championed by: **NGOs, World Bank, Gates Foundation**

2 Market model – example Bangladesh

Sanitation Promotion

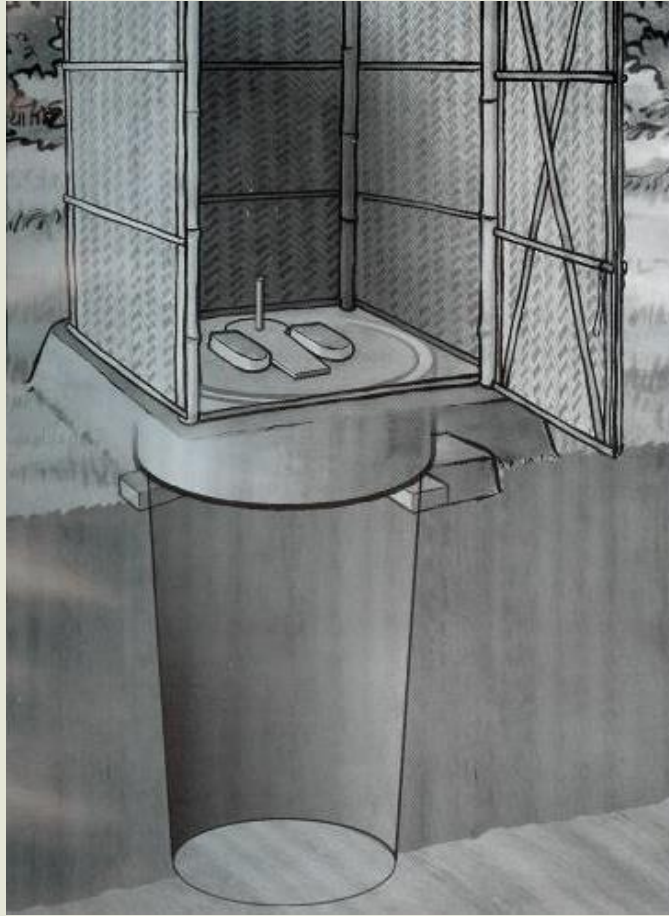
In Bangladesh and India it works to promote latrines with:

- ✓ Privacy: especially for women & girls
- ✓ Comfort: especially for women (safe near the house)
- ✓ Prestige: important for men

2 Market model – example Bangladesh

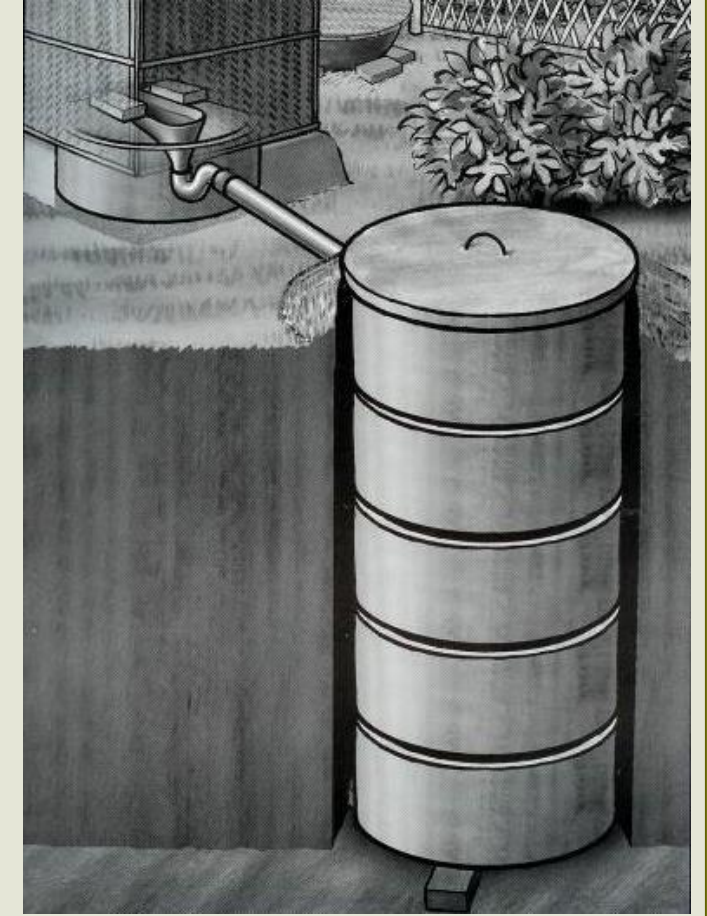
San Plat Latrine

Price:
Cheap and easy
solution
~ **3 US \$**

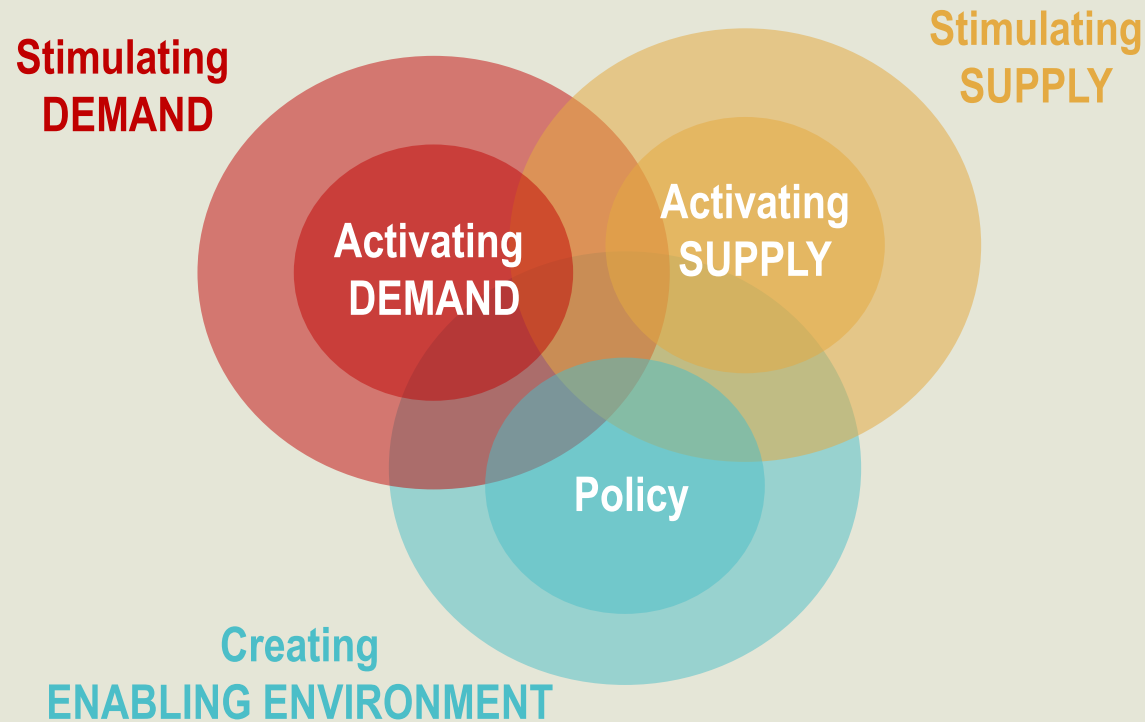


Offset Pit Latrine

Price:
Model with plastic
water seal and
off-set rings
~ **15 US \$**



Systems approach to market-based sanitation



2 Example Kenya: target your customers!

1. *Fahari* GOLD

Made of masonry stones

- * Long-lasting
- * Permanent structure
- * Reduces heat and smell
- * Easy to paint with any colour
- * Materials are easily available



2. *Fahari* SILVER

Made of iron sheets

- * Easy to paint
- * Its affordable.
- * Old iron sheets can be used
- * Not easily damaged by rain and sun

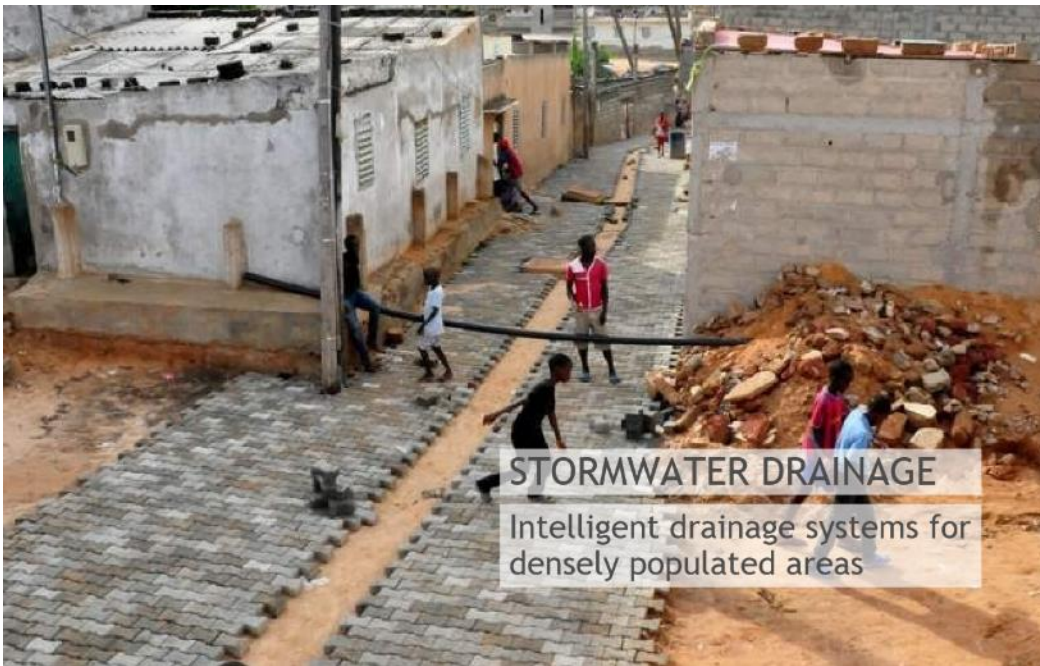


2 Market model – deficiencies

- Most suppliers focus on middle class customers, not interested in BOP market segment;
- Markets will only deliver if the right enabling environment is in place – need for public sector involvement;
- Urban sanitation is more than about access to toilets – urban infrastructure is too costly for single households.

3 The collective action model

- This approach involves greater participation of users and other stakeholders – a **people-centred** approach
- To a certain extent it can be assumed that a cohesive community is in the best position to manage its public facilities.
- Championed by: **NGOs, donors, academic institutions**



© mandu architecture



3

Collective action model: community self-help



1 Ownership

– through participation communities gain ownership of the development process.



2 Efficiency

– community contributions (e.g. mobilizing funds or sweat equity)



3 Better design

and technology choice



4 Social change and empowerment

– participation boosts social capital.

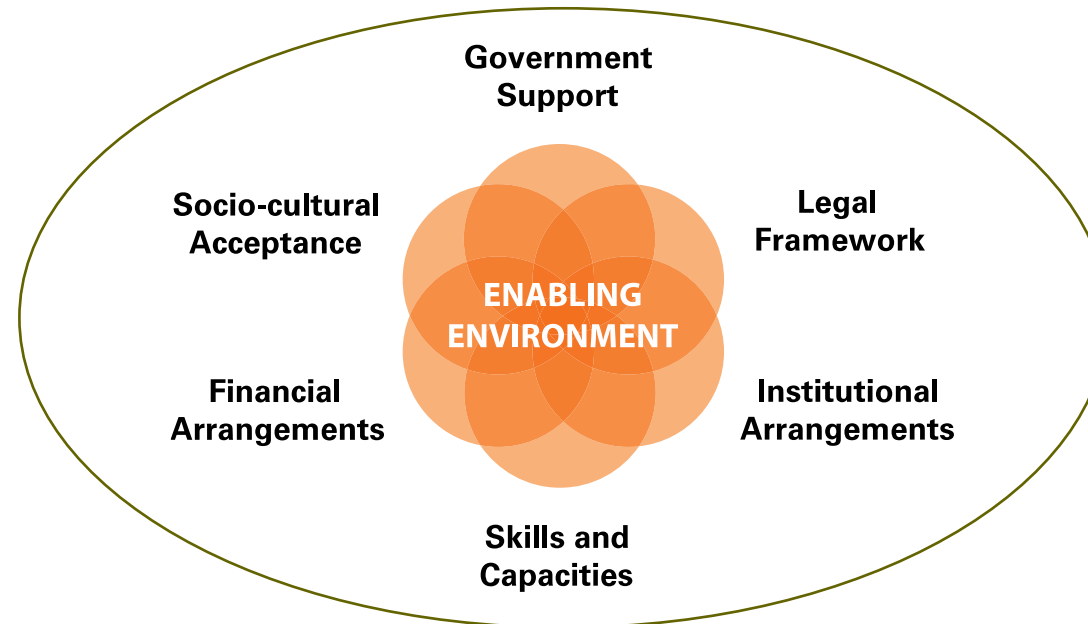
Collective action model – deficiencies

- Networked urban sanitation needs higher level coordination: role of utility/state;
- Danger of «boutique solutions» for one neighbourhood only;
- Continuity of community-based management over time is not guaranteed.



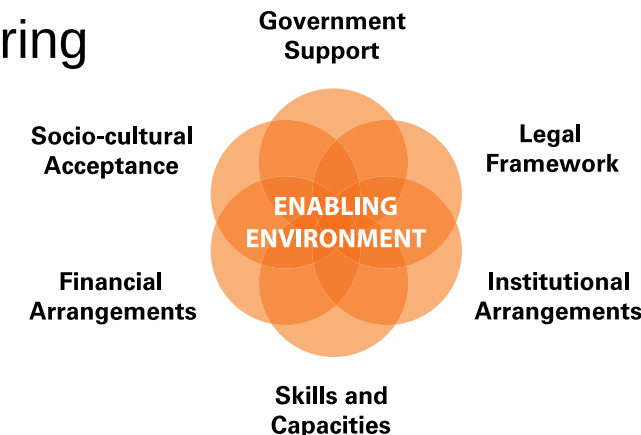
Definition of an 'enabling environment'

“An 'enabling environment' can be seen as the set of interrelated conditions that impact on the potential to bring about sustained and effective change.” (World Bank, 2003)



Conditions for a good 'enabling environment'

- **Government support**, in terms of political will and favourable national policies and strategies
- **Legal framework**, with appropriate standards and codes at national and municipal levels
- Favourable **institutional arrangements**, like private sector partnerships
- **Capacity building** including information and knowledge management as well as communication strategies
- Credit and other **financial arrangements** that facilitate household cost-sharing and community involvement
- **Socio-cultural acceptance** for the proposed solutions and measures



An aerial, isometric view of a city model. The city is divided into several distinct zones. At the top center, a green-shaded area is labeled 'Downtown/CBD'. Below this, a large blue banner contains the title 'CITYWIDE INCLUSIVE SANITATION'. To the left of the banner, an orange box contains the date and speaker information. At the bottom center, a green-shaded area is labeled 'Peri-urban interface'. To the right of the center, a green-shaded area is labeled 'Informal settlements (slums)'. The city features a river, a stadium, and various building models representing different urban densities and types.

Downtown/CBD

CITYWIDE INCLUSIVE SANITATION

31 October: Abishek Narayan:
Innovative Sanitation Planning

Informal settlements
(slums)

Peri-urban interface

Next: Video



- 1 <https://www.youtube.com/watch?v=Xdd4b2yAkgw>

Warangal – the model sanitation city